Administrivia

CS 4410: Operating Systems
Spring 2022
Professor Robbert van Renesse

[R. Agarwal, L. Alvisi, A. Bracy, M. George, F. B. Schneider, E. Sirer, R. Van Renesse]
Inclusion

• We strive to make CS4410 a welcoming, safe, equitable, and respectful environment, consistent with Cornell's commitments.

• We recognize that the society we live in is none of those things, that we have implicit biases, and that we have to work hard every day to counter those biases to create an inclusive environment.

• If you witness a bias incident or have been the victim of one, please file a confidential report with Cornell.

• If you have any suggestions such as improvements to the web site, syllabi, slides, homework and exam questions, and so on, you can email cs4410-prof@cornell.edu.
## Emotional Help

<table>
<thead>
<tr>
<th>Cornell Health</th>
<th><a href="https://health.cornell.edu/services/mental-health-care">https://health.cornell.edu/services/mental-health-care</a></th>
<th>Cornell University Health Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student Disability Services</td>
<td>sds.cornell.edu</td>
<td>Ensures that all aspects of student life are accessible, equitable, and inclusive of those with disabilities. Send accommodation letters to Veronica VanCleave-Seeley (vv48, Gates 401) by Sep 15.</td>
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</tbody>
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Get help. Get documentation. The earlier the better. Also, please look out for each other.
How this class is organized

- Who’s Who
- Before you take this class…
- Communication
  - Lectures, OHs, FAQ, etc.
  - Getting Help
- Homework, exams
About RVR

• Ph.D. C.S., Vrije Universiteit Amsterdam
• Amoeba Distributed Operating System
• Industry: Research Scientist @ AT&T Bell Labs
• Unix, Plan 9
• Serial entrepreneur
  • Reliable Network Solutions (IP → Amazon)
  • D.A.G. Labs (acquired by FAST, then by Microsoft)
  • Exotanium (ongoing)

**Interests:** scalable and fault tolerant distributed systems

**Non-geek:** musician (trad. jazz), swing dance, unicycling
Who are the TAs?

Andreea Foarce
Aliva Das
Archie Jiang
Archie Sravankumar
Austin Hochman
Anthony Yang
Ben Carson
Chris Vincens
Dani (Daum) Song
Haocheng Shen
Terence Zhang
Keshav Ram
Luke Yuan
Quin Burke
Ruiqi Song
Rayan Wali
Ruiqi Zhu
Sowmya Dharanipragada
Sadman Chowdhury
Twesha Modi
Tiffany Zhong
Viktor Giannakouris
Victor Chen
Vianca Hurtado
George Zhuang
Xinwen Wang
Yuqi Shi
How this class is organized

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Prerequisites

• CS 3410, CS 3420 or equivalent required

Otherwise: you must contact an instructor, explain your situation and request permission
Course Content

Four Components

1. Lectures
2. Reading
3. Assignments
4. Exams

You are expected to keep up with all four
Draft Syllabus

• Introduction
• Architectural Support for OSs
• Processes and Threads
• Synchronization
• Scheduling
• Memory Management
• File systems
• Networking
• Security
Required Textbook

OPERATING SYSTEMS
THREE EASY PIECES

REMZI H. ARPACI-DUSSEAU
ANDREA C. ARPACI-DUSSEAU
UNIVERSITY OF WISCONSIN–MADISON

• Free online
• Buy a PDF or a printed version
Also: RVR’s new book

Concurrent Programming with Harmony

Robbert van Renesse
Cornell University

- Free online
- Free PDF download, or read online
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• **Communication**
  • Lectures, OHs, FAQ, etc.
  • Getting Help
• Homework, exams
• Grades & Policies
Communications

- Web page
- Lectures
- Ed Discussion
- Office Hours
- CMSX
Course Web Page

http://www.cs.cornell.edu/courses/cs4410/

- Schedule, exam & due dates
- First homework assignment posted on web page
- Homework release and due dates
- Slides posted before each lecture

*Let’s have a look around at the [web site](http://www.cs.cornell.edu/courses/cs4410/)*
CMSX

https://cmsx.cs.cornell.edu

• Assignments
• Grades & Regrades
Lectures

• Tues/Thurs 1-2:15pm, online, live
• All lectures recorded (until further notice)
  • *but live participation strongly encouraged*
• Posted on Canvas/Zoom with captions
Office Hours

- Slots posted online
- There are **188** 30-minute slots each week
  - All days of the week, including evenings
- All OHs are over Zoom until further notice
  - Will consider special requests for in-person meetings
  - Contact me if you need extra help (nobody left behind)
- You have to register for a slot
  - Please specify NetID and include topic
- *Only sign up for one slot at a time*
Ed Discussion

• Anonymous to other students, but not anonymous to us
• Ask anything you want, but do not share code unless posted privately
• Provide peer-to-peer help
  • Each student should feel safe, welcome, respected
  • Respect diverse talents and ways of learning
Email

cs4410-staff@cornell.edu: time sensitive matters
• Goes to professors & TAs

cs4410-prof@cornell.edu: sensitive matters
• Goes to RVR only

Please no emails to personal email accounts
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• Grades & Policies
Homework

- Assigned approx. once a week
- Individualized, fillable PDFs
  - (slight) randomization of problem parameters, multiple choice questions, etc.
- Fully auto-graded (no TAs involved)
- Regrade requests due within a week
- 2 slip days / assignment
- Max. 6 slip days total
- Your “worst” homework is dropped
  - this does not apply to programming assignments
Programming Assignments

• three different concurrent programming assignments
• work in groups of 2 or 3 students, or do it by yourself if you prefer
• we can help you find a partner
Group Code of Conduct

- Each student should feel safe, welcome, respected
- *Participate, but don’t dominate*
- Be patient
- Respect diverse talents and ways of learning
- Fight your implicit biases

A well-run study group benefits all participants
Academic Integrity & Honor Code

All submitted code must be your own
• Different groups are not allowed to share code
• OK to discuss concepts with any other students

Violations will be prosecuted
Exams

- 2 prelims, 1 final
  - best two out of three
- Randomized
  - Exam questions are versions of homework questions
  - Includes questions about lectures, homework, books
- Must be done individually
- Cumulative
- Regrade requests due within a week
Academic Integrity

Why not cheat?

• It hurts you in various ways:
  – It reduces the value of your Cornell degree
  – It stresses you out because you might get caught
  – You won’t feel good about yourself afterward
  – The energy that goes into cheating is better used for learning

• It hurts other students:
  – It stresses them out
  – By far most students are honest

• High risk, low reward…

If you need help, get it early
Semester Grades

25%  Homework Assignments
25%  Programming Assignments
50%  Exams (best 2 out of 3)

• No “curving”
  – CS4410 is not a competition
  – Your grade reflects your learning objectives, not how well you did compared to others
  – Goal is to give everyone an A

• Weighing of individual assignments and exams TBD
Practicum: CS4411

- CS4410 assignments are “small”
- In CS4411, you’re going to have hands-on C development experience with an almost-real operating system: EGOS
  - Write a queue
  - Write a threading package
  - Write a scheduler
  - Write a file system cache
  - Write a file system
- Teams of two programmers

LOTS OF FUN!